

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) An apparatus comprising:

a plurality of photodetector elements disposed on a semiconductor substrate; and

a compound light directing member including a plurality of light directing elements in a single layer, at least some of the light directing elements to individually direct light energy from one or more sources onto one or more of the photodetector elements, the compound light directing member being the primary mechanism to direct light energy onto the one or more of the photodetector elements,

outputs of the photodetector elements being electrically coupled such that an image associated with one or more sources may be synthesized at output circuitry, the photodetector elements and compound light directing member together providing a substantially planar artificial compound eye.

2. (Original) The apparatus of claim 1 wherein the compound light directing member comprises a lenslet array.

3. (Original) The apparatus of claim 1 wherein the compound light directing member comprises a light pipe bundle.

4. (Original) The apparatus of claim 3 wherein the light pipe bundle includes first and second light pipes, the first light pipe having an external surface that is at a first angle relative to the substrate to preferentially receive light from a first direction, the second light pipe having an external surface that is at a second angle relative to the substrate to preferentially receive light from a second direction, the first and second angles and first and second directions being different from each other.

5. (Original) The apparatus of claim 1 wherein the compound light directing member comprises a plurality of micromachined light directing elements, each of the micromachined light directing elements including an opening, the apparatus further comprising micromachine control circuitry to control an orientation of at least some of the micromachined light directing elements relative to a surface of the substrate, the orientation of each of the light directing elements to determine the light energy received by an underlying photodetector element.

6. (Original) The apparatus of claim 5 wherein the orientation of a first set of the micromachine control elements relative to the substrate is controllable to be different than the relative orientation of a second set of the micromachine control elements.

7. (Currently Amended) An apparatus comprising:

a compound exposure determining member coupled to a semiconductor substrate, the compound exposure determining member including a plurality of light scanning elements, each of the light scanning elements including an integrated photodetector; and

micromachine control circuitry to control an orientation of at least some of the light scanning elements relative to the substrate to determine a direction from which light is received at the respective integrated photodetectors.

8. (Original) The apparatus of claim 7 wherein the micromachine control circuitry is to control a first set of the light scanning elements to be at a different relative orientation than a second set of the light scanning elements.

9. (Original) The apparatus of claim 7 further including output circuitry to provide at least one image corresponding to light sources that provide light received at the photodetectors.

10. (Currently Amended) An apparatus comprising:

a light directing member including a plurality of light directing elements in a single layer; and

an array of photodetector elements disposed on a single integrated circuit device, a set of the photodetector elements being coupled to receive light energy from a source via one or more of the light directing elements, the set of the

photodetector elements being wired to produce an image corresponding to the source at output circuitry to be coupled to the set of the photodetector elements, wherein the light directing member and the single integrated circuit device together provide a substantially planar, artificial, compound eye.

11. (Original) The apparatus of claim 10 wherein the light directing member comprises a lenslet array and the light directing elements each comprise a lenslet.

12. (Original) The apparatus of claim 10 wherein the light directing member comprises a light pipe bundle and the light directing elements each comprise a light pipe.

13. (Original) The apparatus of 10 wherein the light directing member comprises a plurality of micromachined light directing elements, each of the micromachined light directing elements including an opening, the apparatus further comprising micromachine control circuitry to control an orientation of the micromachined light directing elements relative to a surface of the integrated circuit device, the relative orientation of each of the micromachined light directing elements to determine a direction from which light is received at one or more underlying photodetectors.

14. (Original) The apparatus of claim 13 wherein
the micromachine control circuitry is to control a first set of the
micromachine control elements to be at a different relative angle than a second
set of the micromachine control elements with respect to the surface of the
integrated circuit to enable the capture of multiple images.

15. (Currently Amended) A method comprising:
determining from which angles and which point sources light energy is
directed to associated photodetector elements integrated on a single substrate
using a compound exposure determining member, the compound exposure
determining member including a single layer of exposure determining elements;
producing an output signal at each photodetector element that is
responsive to the light energy received by the respective photodetector element;
and
integrating outputs of the photodetector elements to produce an image
associated with the point sources.

16. (Currently Amended) The method of claim 15 wherein
determining from which angles and which point sources light energy is
directing directed to associated photodetector elements includes using a lenslet
array, wherein the single layer of exposure determining elements includes
lenslets of the lenslet array.

17. (Currently Amended) The method of claim 15 wherein determining from which angles and which point sources light energy is directing directed to associated photodetector elements includes using a light pipe bundle, wherein the single layer of exposure determining elements includes light pipes of the light pipe bundle.

18. (Currently Amended) The method of claim 15 wherein determining from which angles and which point sources light energy is directing directed to associated photodetector elements includes using controllable micromachine light directing elements, wherein the single layer of exposure determining elements includes micromachine elements.

19. (Currently Amended) A method comprising:
providing an array of photodetector elements disposed on a semiconductor substrate;
providing a light directing member including a plurality of light directing elements in a single layer, at least some of the light directing elements to individually direct light energy from a source onto one or more of the photodetector elements; and
providing a compound eye wiring to integrate outputs of the photodetector elements to produce an image corresponding to the source.

20. (Original) The method of claim 19 wherein providing a light directing member includes providing a microlens array.

21. (Original) The method of claim 19 wherein providing a light directing member includes providing a light pipe bundle.

22. (Original) The method of claim 19 wherein providing a light directing member includes providing micromachine light directing elements.